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اتجاهات معدلات حدوث الأمراض المعدية بين الأطفال في أفغانستان في وقت توسيع الخدمات الصحية

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تستعرض هذه الدراسة اتجاهات معدلات حدوث الأمراض السارية الشائعة بينالخلاصة : الأطفال دون سن الخامسة في أفغانستان في الفترة بين 2005 و2013. وتم اتخاذ عدد الزيارات الجديدة لعيادات المرضى الخارجين ليكون المقام عند حساب النِّسَب . وفي عام 2013 كان ما يقرب من ثلاثة أرباع إجمالي الزيارات الجديدة التي قام بها الأطفال للخدمات الصحية في القطاع العام بسبب الأمراض المعدية، وكانت الأمراض التنفسية هي الأكثر شيوعاً . وبسبب عدم التناسق في جمع البيانات حول بعض الأمراض المعدية في وقت مبكر فإن اتجاه الأمراض المعدية على وجه الإجمال يتعذر تقديرها . إلا أنه كان هناك اتجاه متناقص ذو أهمية إحصائية لنسب الزيارات الجديدة التي يتم تشخيصها على أنها أحد الأمراض الأحد عشر السارية الرئيسية، فبعد أن كانت 74.5% عام 2005 أصبحت 62.1% عام معدل ولكن ،الولايات بين السارية الأمراض أنماط في فرق هناك يكن ولم 2013 ($p < 0.001$). الاستشارات لكل نسمة ترافق بنسبة أعلى مع العدوى الرئيسية ($p = 0.008$). إن جوانب التحسن التي طرأت مؤخراً على صحة الأمهات وعلى النظافة الشخصية وعلى الخدمات الوقائية قد يكون لها تأثير في خفض عبء العدوى .

ABSTRACT This study reviewed trends in the incidence of common communicable diseases among children under five years in Afghanistan between 2005 and 2013, a period of expansion of public health services. New visits to outpatient clinics constituted the denominator for calculating proportions. In 2013, almost three-quarters of all new visits of children to public health services were for an infectious disease, with respiratory infections the most common. Because of inconsistent data collection for some infections early in the period, the trend for infectious diseases as a whole cannot be estimated. However, there was a statistically significant downward trend in the proportion of new visits that were diagnosed as one of the 11 leading communicable diseases from 74.5% in 2005 to 62.1% in 2013 ($P < 0.001$). There was no difference in communicable disease patterns between provinces, but a higher per capita consultation rate was associated with a higher proportion of the leading infections ($P = 0.008$). Recent improvements in maternal health, hygiene, and preventive services may have had an impact in reducing the burden of infections.

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Tendances de l’incidence des maladies infectieuses chez les enfants en Afghanistan à l’heure de l’élargissement des services de santé publique

RÉSUMÉ La présente étude a étudié les tendances de l’incidence des maladies transmissibles les plus répandues chez les enfants de moins de cinq ans en Afghanistan entre 2005 et 2013. Les premières consultations en soins ambulatoires ont constitué le dénominateur pour calculer les pourcentages. En 2013, près de trois quarts de toutes les premières consultations d’enfants dans les services de santé publique avaient pour cause une maladie infectieuse, les infections respiratoires étant les plus fréquentes. Du fait d’une collecte des données incohérente pour certaines infections au début de la période d’étude, les tendances pour les maladies infectieuses dans leur ensemble ne peuvent être estimées. Pour autant, une tendance à la baisse statistiquement significative a été observée en ce qui concerne le nombre de premières visites pour lesquelles le diagnostic établi était l’une des 11 maladies transmissibles les plus répandues (74,5 % en 2005 contre 62,1 % en 2013, soit $p < 0,0001$). Aucune différence en termes de caractéristiques des maladies transmissibles n’a été établie entre les provinces, mais un taux de consultation plus élevé par habitant a été associé avec un pourcentage plus élevé pour les infections principales ($p = 0,008$). Les récentes améliorations en matière de santé maternelle, d’hygiène et de services de prévention ont pu avoir une influence sur la réduction de la charge des infections.

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Received: 28/08/15; accepted: 03/07/16

Introduction

Afghanistan has suffered from instability and conflict for the past 40 years. Almost 36% of the population live below the poverty line (1) and access to public sector health facilities has historically been inadequate (2). In such a context, a high incidence of treatable diseases is to be expected. Children are particularly affected, not only because they are more vulnerable, but also because they constitute a large proportion of the Afghan population, of which 64% are under 24 years (2) and 17% under 5 years of age (3). The mortality rate for children under five years old is estimated to be 99 per 1000 live births, while the infant mortality rate is 71 per 1000 live births; with these rates, Afghanistan is 18th from last on the United Nations Children’s Fund (UNICEF) ranking of countries for child health (3). Children’s health is a sensitive reflection of the efficiency of the health services in a country.

In recent years, particularly since 2001, efforts have been made to expand public health services and increase access to them, as part of international cooperation to rebuild the country (4). Several studies have evaluated the association between these efforts and various health indicators, particularly in the areas of malnutrition, reproductive health, mortality and immunization, for both academic and planning purposes.

A less studied area is whether recent developments in Afghanistan have been associated with specific trends and characteristics of infectious diseases, particularly among children. While it is generally assumed that most diseases affecting children are communicable, precise numbers and trends have not been comprehensively studied, especially in relation to the recent expansion of public health services. A few sources, such as the Multiple Indicators Cluster Surveys (MICS) and the Afghanistan National Household Surveys, contain sections on infectious disease morbidity, but these are usually limited in scope. In the absence of systematic data, it is hard to calculate the prevalence of communicable diseases in the country.

The objective of this study was to assess trends in communicable diseases among children under five years of age, with particular attention to the most frequent infections, in light of recent efforts to invest in and expand public health services throughout the country. The results could provide some measure of the success of the efforts, as well as lessons for other similar undertakings.

Methods

The absence of a consistent health information system prior to 2004 makes the historical study of disease patterns among children difficult. Thus, we considered only reports on patterns, characteristics, and trends in communicable disease among children attending public health facilities from 2005 to 2013. During this period, public health facilities expanded considerably. We used data from facilities implementing the Basic Packages for Health Services (BPHS), which have been in place since 2002 (5). Nationally, nearly 80% of consultations for under-five-year-olds take place in these facilities (6). The number of such health facilities providing BPHS increased from 1075 in 2004 to over 2000 in 2014 (7).

In the absence of a national census, we used the totals for all “new visit” consultations for children in BPHS facilities as the denominator for calculating proportions; this method is also used in the Ministry of Public Health’s Diseases Early Warning System (MoPH–DEWS) (8). The data set is managed by the Health Management Information System (HMIS) Department of the Ministry, which defines a “new visit” as a visit at which “a patient [is] diagnosed with an episode

of an illness for the first time". Return visits for the same diagnosis within a predefined period were considered as re-attendance, and were excluded from our analysis. The diagnoses categorized as communicable diseases among children under five years of age in HMIS are listed in Box 1; classification is based on clinical manifestations.

We used data from 2013 to assess disease trends, seasonal fluctuations, and distribution by province. We then analysed trends in some key diseases between 2005 and the end of 2013. Data analyses were performed with STATA statistical software (v.12) and Excel (v.2013). Linear regression analysis was used to evaluate the significance of associations. Reports from the World Health Organization, UNICEF, the United States Agency for International Development, and the Afghanistan MoPH were consulted for comparison.

Results

Monthly data returns for 2013 reported 13 404 322 new visits of children less than five years old to BPHS facilities for all conditions. Of these, 9 678 477 (72%) were diagnosed as having a communicable disease (Table 1). Among all first visits for communicable disease, respiratory infection was the most frequent diagnosis, with 2 610 013 cases of acute respiratory infection (ARI) (27%) and 1 067 017 of pneumonia (11%). Diarrhoea, ear, nose and throat infection, urinary tract infection, and malaria were the next most frequently reported infectious diseases.

There were no statistically significant seasonal fluctuations in the overall proportion of diagnoses of communicable diseases in 2013, although respiratory infections peaked around December–March (winter), diarrhoea in June–August (summer), and malaria in June–September. The total number of first visits to outpatient departments of public health facilities by children under five years increased from 2 883 736 in 2005 to 13 404 322 in 2013 (Table 2), as a result of the expansion of the health infrastructure in Afghanistan during this period (7). From 2005 to 2010, there was an apparent downward trend in the proportion of first visits that were for communicable disease, which reversed after 2010 (Figure 1). This may reflect a change in the reporting forms in 2010 to include specific communicable diseases that had previously been recorded as "others", e.g. eye infections, intestinal worms, skin diseases, and oral–dental infections. This inconsistent recording of data means that no statistically significant trend can be distinguished in the proportion of new visits classified as communicable diseases, over the period 2005–13 (Table 2).

There was, however, a statistically significant downward trend in the proportion of new visits that were classified as one of the infections for which there was continuous reporting, in particular the 11 leading infections (P < 0.001). Overall, the average decrease was around 1.8% per year (Table 3). Further breakdown of the data showed a reduction in the incidence of all these diseases, except ARI and measles (Table 3 and Figure 2). Malaria showed the most dramatic fall. Statistically similar patterns were seen in girls and boys.

Similar patterns of the leading infections were found in the different provinces, despite differences in climate and in socioeconomic and other characteristics. From 2008 to 2011 (9), higher consultation rates in provinces were positively correlated with higher proportions of visits for the leading communicable diseases (an average of 2.5% increase for each point increase in per capita consultation rate (P = 0.008)).

Discussion

Our results show that respiratory infections account for the biggest share of all new visits to public health facilities by children under five years. The finding is in line with previous studies (8,10); of 247 216 deaths reported among children under five in Afghanistan in 2008, 72 716 (29.4%) were attributed to pneumonia (11). Afghanistan is part of the list of those few countries that account for half of pneumonia-related deaths among children (11). However, despite continuing to be the most widespread disease among children, our analysis indicates a statistically significant reduction in the proportion of diagnoses of pneumonia between 2005 and 2013. There may be several possible explanations for why incidence rates are falling while mortality remain high for respiratory infections. It may be that many cases are not reported to the database that we used, but are accounted for through other means (remembering that there are considerable areas where there are still no regular services). Or it could be that, in the information system, children who die from pneumonia are categorized as severely ill patients, using the Integrated Management of Childhood Illnesses (IMCI) classification, and may be reported separately on an IMCI form (12). Therefore, while there may have been a modest reduction in pneumonia, as found also in another recent study (8), the apparent dramatic decrease in morbidity rates found here should be viewed with great caution.

In general, the findings indicate that almost three-quarters of all new visits of children to public health facilities are for communicable diseases. Reports from DEWS indicate that the proportion of communicable disease diagnoses in all outpatient departments in public sector facilities for all age groups is between 60% and 80% (8). This suggests that, whatever the trends, the burden of communicable diseases in Afghanistan is still very great.

Although no association was found between geographical location and burden of infections

among children, we found that the higher the per capita consultation rate, the higher the proportion of diagnoses for the leading 11 communicable diseases among children. It is likely that, in rural provinces, consultation rates in the public sector facilities are higher, as there is a paucity of private clinics in these areas. It may also be that larger family sizes in rural areas create a higher demand for paediatric care. A report in 2014 found a higher risk of death from infectious causes among children in remote rural areas, consistent with our analysis (13). It is interesting that no difference was observed in the proportion of infections among boys and girls, contrary to popular perception that boys are more vulnerable.

The incidence of the leading infectious diseases appears to be declining. Similarly, the DEWS reported a reduction in communicable diseases among the general population from 2007 to 2013, comparing their annual reports in this period based on assessment of a wider datasets. Another study reported that the proportion of disability-adjusted life years (DALYs) attributable to communicable and neonatal diseases was 48.9% in 2010, a reduction of 20% from 1990 (14). Thus, as suggested by these other sources, there may be a real downward trend in some important childhood infections, if not in all.

It is plausible that efforts to improve the public sector health services in Afghanistan since 2002 have contributed to the reduction in pneumonia and other communicable diseases in the country (15). These investments, aimed at improving service delivery, especially for women and children (16), have produced results that may be associated with reduced childhood morbidity, including: a reduction of almost three-quarters in the maternal mortality rate (17), which is attributed to better antenatal and postnatal care (18); an increase of 4000% in the number of births attended by a skilled birth attendant (7); and improved family planning services (19). Another relevant development may be the improvements in water supply, sanitation and hygiene.

The MICS survey in 2010–11 found that 57% of the population had access to clean water and hygiene, a substantial improvement compared with the early 2000s (20). According to field studies, better access to clean water is the reason for the reduced incidence of diarrhoea and typhoid (8). A study in Wardak province demonstrated that a water and hygiene intervention resulted in a 40% reduction in diarrhoea-related illness (21). Improved water and sanitation may also be associated with the reduction in outbreaks of viral hepatitis, which is mostly transmitted through contaminated food and water (22). Other contributory factors could be the wider implementation of preventive measures and control programmes, such as vaccination campaigns and distribution of insecticide-treated nets (ITNs), which are credited with reducing the incidence of poliomyelitis and malaria, respectively (8). In some parts of Afghanistan, up to 75% of the population uses ITNs (23).

We found some reports of circumstances that could potentially or actually hinder efforts to reduce the burden of childhood infections. These include inadequate vaccine coverage. In the case of measles, the coverage was reported by different sources to be as low as 44% in the second quarter of 2012 (24), 62% in 2011 (3) and 56.7% in 2010/11 (20). Continued insecurity and a low level of education among women, particularly in rural areas (8), may have hampered vaccination efforts. Such low coverage in a context of high birth rates can only mean frequent outbreaks, which may also have distorted the trends in measles and poliomyelitis in our analysis. The high rate of malnutrition among children (25), a consequence of food insecurity (26), poor economy, extreme weather conditions, and ongoing conflict, may further contribute to mortality rates. The interaction between malnutrition and childhood infections (27), which results in a vicious cycle of more infections, makes it harder to tackle the burden of infections. While the fertility rate in Afghanistan is falling, the birth rate is still high compared with other countries in the region, at 39–48 per 1000 population (28). With high fertility rates, it is harder to reduce the burden of some infections, e.g. measles, as has been observed in other regions of the world (29). Furthermore, a shortage of qualified health professionals adds to the challenge (2).

Limitations of results

Our main source of information for this study was reports to the HMIS, which started collecting data in 2003. The data are not collected under the rigorous conditions typically applied to designed studies. The majority of cases are diagnosed and reported on the basis of clinical manifestations; thus, incorrect classification, resulting in over- or under-reporting, is an occasional problem (30).

Another limiting factor is the difficulty of establishing reference points and denominators for morbidity rates, because of the lack of national census data. For this reason, we chose to use proportions rather than rates, and children attending outpatient departments as the denominator, rather than those in the general population. This might not reflect health service use by some parts of the population, e.g. those who prefer to use the private sector, which is not regulated and does not contribute data to the national system (31). It is possible that higher-earning groups have lower incidence rates of disease.

Conclusion

While children are still affected by a high burden of infectious diseases, the picture is gradually improving for at least a few key communicable diseases. Although it is hard to attribute the observed results to specific factors, recent progress in maternal health, access to clean water and hygiene, and wider implementation of control programmes – all as a result of recent public health programmes – may have been associated with the reduction in infectious diseases among children. However, if the momentum is to be sustained, policy-makers and health planners need to address remaining challenges, through continued investment in quality health services and infrastructure, especially in areas such as vaccine coverage, food security,

awareness of hygiene and nutrition, training of health personnel, and programme monitoring.

Acknowledgements

We thank the Ministry of Public Health of Afghanistan for allowing us access to their database; particular thanks go to Dr Sayed Yaqoob Azimi, Head of the HMIS Department, and to Dr Wudod Safi, Consultant to the HMIS Department.

Funding: None.

Competing interests: None declared.

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